Orion Crew Exploration Vehicle Weekly Accomplishments

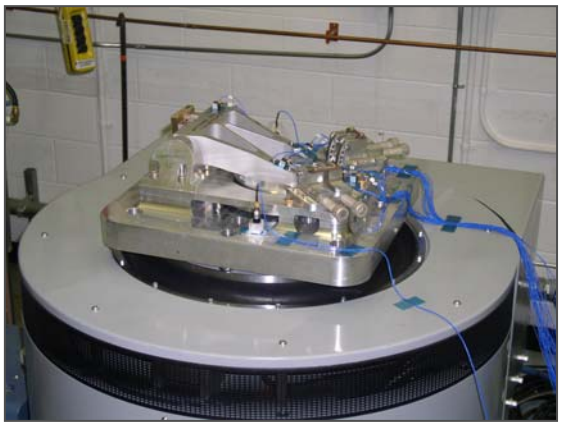
Week ending March 7, 2009

The Crew Module (CM) pathfinder was tucked inside a C-17 for transport to White Sands Missile Range (Photos above and below left). The CM-SM Integration Fixture (CSIF) is being prepared for shipment from Langley Research Center to the FITF located near the PA1 launch site. The CSIF will first be used by the operations crew to mate the pathfinder CM to the PA1 SepRing as a pathfinding operation in June. The CSIF will later support the mate of the PA1 CM to the PA1 SepRing prior to the transport of the CM/SepRing stack to the launch pad.

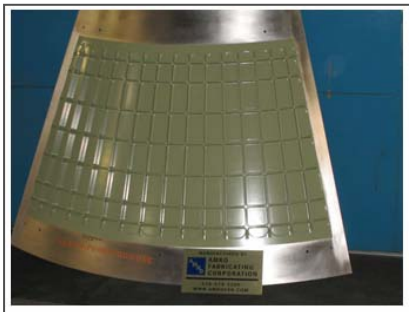
The Launch Abort System (LAS) pathfinder with its integration trailer was shipped from Langley Research Center and arrived at its destination at the PA1 launch site at White Sands Missile Range. This hardware will be used by the operations crew to practice the LAS to crew module stacking operations in May.

A second hardware test was held at Johnson Space Center White Sands Test Facility to observe the burst threshold of the Orion Ascent Abort – 1 (AA-1) crew exploration vehicle Reaction Control System (RCS) composite overwrapped pressure vessel (COPV). Designed and built by Glenn Research Center, the RCS will be used to ensure proper orientation of the vehicle under the parachutes. For this second test, instrumentation was added to the tank and setup. Conducted to verify AIAA S–081A standards, this test involved impacting the burst tank in two locations with a known impact force prior to pressurization. The tank was raised from ambient and held at 6,350 psig, the tank's maximum absolute working pressure for 60 seconds. The pressure was then increased to 15 psi/sec until failure of the tank, which occurred at 15,556 psig. Post test inspection shows that the COPV tank failed globally and not at either impact site.

The T-0 (Thermal and Electrical) door assemblies for the second "flight" set of doors are complete. The T-0 thermal door has gone to vibration testing while the T-0 electrical door frame corrective action is taking place. As soon as it is ready, the T-0 electrical door will go to vibe. T-0 door test vibe fixture plates (Photo left) have completed fabrication and vibration bare fixture runs.
(*Photo bottom left) T-0 Thermal Door X-axis Vibe Configuration*



Structural component fabrication for the crew module ground test article (GTA) is progressing. The vendor responsible for machining the primary orthogrid panels for the CM pressure shell (Amro Fabrication Corporation) is shipping 4 barrel panels and 2 cone panels to the Michoud Assembly Facility this week (see photos below), with additional components in work. These components will next be formed and net-trimmed in preparation for welding, with the first friction-stir weld scheduled for April 15.



Cone Panel

Barrel Panel